PRESENTATION TO RAP COMMITTEE

By M-91 Issue Manager Team

WHAT IS THE SCOPE OF THE M-91 MILESTONE SERIES:

(Source: HNF-19169, rev 22, Sept 20, 2020)

- Removal of the retrievably stored waste from the burial grounds.

- Dispose of the mixed low-level waste (MLLW) and transuranic mixed (TRUM) waste in storage.

- When these milestones are complete, DOE will have successfully treated the MLLW and shipped the TRUM waste offsite for disposal.

The scope of the M-091 Milestone series includes:

- MLLW and TRUM waste in aboveground storage as of June 30, 2009,
    - Central Waste Complex (CWC),
    - T Plant,
    - Waste Receiving and Processing (WRAP) Facility.

- RSW placed in the low-level burial grounds (LLBGs) after May 6, 1970, and was believed to meet TRU waste criteria.
    - 218-W-4B,
    - 218-W-4C, (removal of RSW complete)
    - 218-W-3A,
    - 218-E-12B

DEFINITION OF RETRIEVABLE STORED WASTE (RSW):

Retrievable Stored Waste (RSW) (as defined by Tentative M-91 Milestone Series)

- "As used herein is defined as waste that is or was believed to meet the TRU waste criteria when it was placed in the 218-W-4B, 218-W-4C, 218-W-3A and 218-E-12B burial ground trenches after May 6, 1970.
    - RSW does not include waste in containers that have deteriorated to the point that they present a risk to workers.
        - Path forward through RCRA and CERCLA processes.
        - May result in additional remediation.

Additional definition comments from HNF-19169, Rev 22:

- Pre-1970: TRU waste defined as "waste with known or detectable contamination of transuranium nuclides." Buried in cardboard boxed and compressed in BGs.
- March 1970, TRU waste placed in retrievable storage that would allow the waste to be retrieved within 20 years. Before this date, this waste was disposed as LLW. Began use of 55-gal drums.
- 1973, the TRU waste segregation limit was established at 10 nCi/g of TRU isotopes.
- 1982, the limit was changed to 100 nCi/g.

Definition of CH RSW:

- Contact-Handled waste is a waste container with a surface dose rate less than or equal to 200 mrem/h.

MAJOR SECTIONS OF PROJECT MANAGEMENT PLAN

Transuranic Mixed/Mixed Low-Level Waste Project Management Plan

HNF-19169, Rev 22 (Issued September 2020)

Each section of the PMP describes implementation of M-91 Milestones.

SECTION 1: PROJECT OVERVIEW.

SECTION 2: ACQUISITION OF NECESSARY CAPABILITIES.

- **M-091-58** Perform engineering study on the impacts of radiological decay on the costs and schedule for retrieval, processing, certifications, and shipment/disposal of RH MLLW and RH TRUM waste by 9/30/2024.
- **M-091-55** 30% conceptual design for CH facility by 9/30/2024.
- **M-091-56** 90% final design report for CH facility by 9/30/2026.
- **M-091-54** Identify facilities to treat, store, dispose of CH, RH waste by 9/30/2028.

Note that two studies of alternative facilities were previously completed (completed Milestone M-091-52 in FY 2017). These studies formed the basis for the above milestones.

1. CHPRC-03264, “Alternatives Evaluation.”
2. CHPRC-02916, “Engineering Alternatives Study.”

A web link to both of these documents is located in the Reference Section of the September 2020 PMP.

SECTION 3: RETRIEVAL AND DESIGNATION OF RETRIEVABLY STORED WASTE.

- **M-091-49:** Complete retrieval and designation of CH RSW from 218-W-4B, 218-W-3A and 218-E-12B burial grounds by 9/30/2039.
- **M-091-49B** Complete retrieval of RH RSW by 9/30/2048.

Note that Section 3 reports the following overview:

  - Original volume of RSW in burial grounds = 15,200 cubic meters.
  - Retrieved approximately 12,700 cubic meters.
  - Approximate RSW remaining to be retrieved = 2,680 cubic meters.

SECTION 4: CERTIFIABLE TRUM WASTE AND MLLW TREATMENT.

- **M-091-47-T01** Certify or treat 280 m3 of TRUM & MLLW by 9/30/2021.
- **M-091-47-T02** Certify or treat another 280 m3 by 9/30/2022. Also, submit change control form to establish the next two target dates by 9/30/2022.
- **M-091-60** Initiate treatment to LDR standards for MLLW by 9/30/2028.

SECTION 5: CERTIFICATION AND SHIPMENT OF TRUM WASTE.

- **M-091-57** Initiate certification of CH TRUM containers by 9/30/2026.
- **M-091-60** Initiate shipments of TRUM to WIPP by 9/30/28.
- **M-091-61** Complete shipments of small container TRUM by 9/30/2040.
- **M-091-62** Complete shipment of large container TRUM by 9/30/2045.
- **M-091-48** Complete off-site shipment of retrievable TRUM by 2050.

SECTION 6 STORAGE CAPACITY: CWC, WRAP, T Plant, Outside Storage Areas.

- **M-091-53A** Remove 10 mixed waste containers from OSA by 11/30/2021.
- **M-091-53B** " " " " " " " " 11/30/2022.
- **M-091-53C** " " " " " " " " 11/30/2023.
- **M-091-53D** " " " " " " " " 11/30/2024.
- **M-091-53E** " " " " " " " " 11/30/2025.
- **M-091-59** Remove all m-waste containers from OSA-A &B by 9/30/2026.

SECTION 7 TRU WASTE GENERATED FROM CERCLA CLEANUP ACTIONS:

- HAB advice #285 on September 10, 2015 requested that the M-91 milestone process be expanded to provide a "global continuity" with other TRU cleanup activities.
- Section 7 of the PMP provides a "global continuity" by listing the CERCLA closure activities which will generate TRU waste for offsite shipment.
- Section 7 of the PMP is responsive to HAB advice but is not a M-91 topic.

SECTION 8 PROJECT CONTROL ELEMENTS:

- **M-091-03** Issue Project Management Plan (PMP) annually by June 30.
- The PMP will outline the plans to implement the M-91 Milestone series.

TALKING POINTS COVERED BY PRESENTOR

1. Slide one: The M-91 Milestone Series covers a very narrow scope.
    a. Only retrievably stored waste (RSW).
    b. Includes both mixed TRU (TRU-M) and MLLW.
    c. RSW scattered in 4 burial grounds and RSW in storage.
2. Slide two: Definition of RSW focuses on TRU; however M-91 includes MLLW.
    a. Pre-1970 definition of TRU waste: All waste from Pu facilities incl. MLLW.
    b. Post-1970 definition: TRU waste to be retrievable within 20 years.
    c. 1973 definition: 10nCi TRU isotopes/g of waste.
    d. 1983 definition: 100 nCi TRU isotopes/g of waste.
    e. Consequences of these changing definitions and requirements.

3. Slide three: The September 2020 TRUM & MLLW Project Management Plan explains the forward implementation of M-091 Milestone Series.

    Major topics of M-91 reflected in PMP.

    - Removal of TRUM and MLLW from storage areas.
        - Consistent with previous HAB advice.
    - Removal of retrievably stored TRUM; ship to WIPP.
        - Consistent with previous HAB advice.
    - Construction of new facilities for RSW processing.
        - Consistent with previous HAB advice.
    - Consideration of TRU from CERCLA closures.
        - Consistent with previous HAB advice (for global continuity).

AREAS OF FUTURE INTEREST TO RAP COMMITTEE:

1. Recovery of RH TRU from caissons.
2. Recovery of large boxed TRU.
3. Options for new facilities to handle RH and large-boxed TRU.
    a. Handling large failed process equipment.
    b. Handling Pu gloveboxes.
4. Handling the different types of TRU waste to be generated from SSTs, Pu facilities, pre-1970 burial grounds, CERCLA sites, cribs, ditches, MUSTs.
    a. See Section 7 of the PMP for topics.
5. Topics to be added during RAP Committee meeting

W-3A Burial Ground

HNF-19169, REV. 22

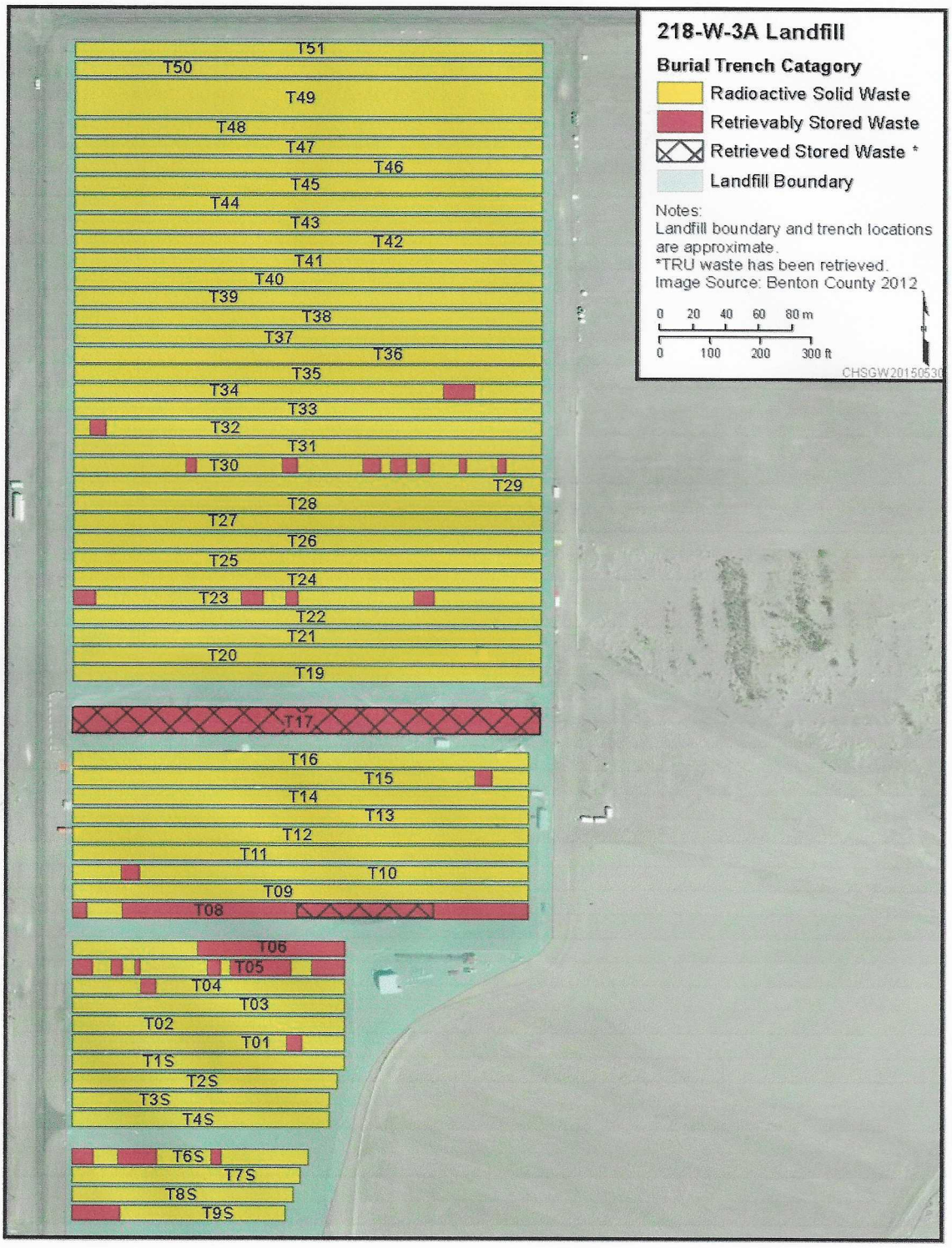

Figure C-4. Trenches in Low-Level Burial Ground 218-W-3A

Page 1 of Table ES-1 200-SW-2 OU Landfills (from DOE/RL-2004-60, Rev 1)

Table ES-1. Summary Information for the 200-SW-2 OU Landfills

Landfill	Number of Trenches	Volume[a] of Buried Waste		Area[a]	
		m^3	ft^3	ha	ac
Eastern Inner Area (12 Landfills)					
218-C-9[b]	1	7,600	270,000	1.8	4.5
218-E-1	15	3,000	110,000	1.0	2.4
218-E-2	9	9,000	320,000	1.3	3.3
218-E-2A	[c]	[c]	[c]	0.3	0.7
218-E-4	[d]	1,600	57,000	1.2	2.9
218-E-5	2	3,200	110,000	1.1	2.6
218-E-5A	1	6,200	220,000	0.38	0.9
218-E-8	1	2,300	81,000	0.44	1.1
218-E-9	[c]	[c]	[c]	0.56	1.4
218-E-10[e]	14	26,000	920,000	23	57
	Portion that was unused			13	32
218-E-12A	28	15,000	530,000	10	25
218-E-12B[e]	39	66,000	2,300,000	23	57
	Portion that was unused			26	64
	U.S. Navy nuclear reactors (out of scope)			21	52
Western Inner Area (12 Landfills)					
218-W-1	15	7,200	250,000	2.2	5.5
218-W-1A	12	14,000	490,000	3.4	8.4
218-W-2	20	8,200	290,000	2.8	7.0
218-W-2A[f]	27[g]	25,000	880,000	15.3	38
218-W-3	20	11,000	390,000	3.1	7.6
218-W-3A[e]	61[g]	98,000	3,400,000	21	52
218-W-3AE[e,f]	8	34,000	1,200,000	20	49
218-W-4A	22	18,000	640,000	7.0	17
218-W-4B[e]	15	7,300	260,000	3.5	8.6

Page 2 of Table ES-1, 200-SW-2 OU Landfills

Table ES-1. Summary Information for the 200-SW-2 OU Landfills

Landfill	Number of Trenches	Volume[a] of Buried Waste		Area[a]	
		m^3	ft^3	ha	ac
218-W-4C[c,h]	16[g]	15,000	530,000	15	37
	Portion that was unused			4.3	11
218-W-5[e]	11	72,000	2,500,000	24	59
	Lined trenches 31 and 34 (out of scope)			10	25
218-W-11	2[i]	1,200	42,000	0.87	2.1
Totals	**339**	**450,000**	**16,000,000**	**257**	**634**

a. All numbers are estimates based on historical information, rounded to two significant figures (including total waste volumes). Waste volumes include in-scope waste only.

b. The 218-C-9 Landfill is collocated with the 216-C-9 Pond.

c. The 218-E-2A and 218-E-9 Landfills may have been used only for aboveground storage of contaminated equipment. There are no records or inventories of disposal.

d. The number of trenches and total length are unknown.

e. Landfill is a permitted treatment, storage, and/or disposal unit landfill under RCRA. These landfills include the "Green Islands" (see Figures ES-1 and ES-2 for Green Island locations).

f. The 218-W-2A and 218-W-3AE Landfills are collocated with the 216-T-4, 216-T-4A, and 216-T-4B Ponds and the 216-T-4-2 Ditch.

g. Five of the trenches in the 218-W-2A Landfill, four in the 218-W-3A Landfill, and one in the 218-W-4C Landfill were not used. These numbers include the unused trenches.

h. The 218-W-4C Landfill is collocated with the Z Plant burn pit.

i. Geophysical investigations conducted in 2006 suggest that only one trench exists.

The 200-SW-2 OU landfills contain approximately 450,000 m^3 (590,000 yd^3) of waste. This waste is a heterogeneous mixture of solid waste generated during various operating periods that began in the mid-1940s and ended in about 2005. All landfill waste included in the 200-SW-2 OU has been buried in trenches that were designed and constructed to varying lengths, widths, and depths. Additional information on each of the landfills is provided in the CSMs (Appendix D).